

CLAIMS

1. Component (30, 40, 50) to be mounted on a transfer surface (20, 21), and comprising at least one layer defining a plane in which at least one transfer
5 face (A, C) of the component, not parallel to said plane, comprises at least one metallised bonding land (35, 36, 37, 38, 47, 48, 57) enabling assembly of the component by transfer and soldering (27, 28) of the metallised bonding lands onto the transfer surface,
10 characterised in that at least one metallised bonding land of said component is arranged in a recessed notch (37, 38, 47, 48, 57) setback from the surface (39, 49, 59) of the transfer face (A).

15 2. Component according to claim 1, comprising at least one active layer.

20 3. Component according to claim 2, the active layer being an optically active layer.

4. Component according to one of the above claims, characterised in that it is further associated with a support platform (20) forming a transfer surface (21) and comprising metallised mounting lands (25, 26)
25 corresponding to the metallised bonding lands (37, 38) of the component.

5. Component according to one of the above claims, characterised in that said metallised bonding

land(s) is (are) arranged at the border of the transfer face (A) of the component.

5 6. Component according to one of the above claims, characterised in that the transfer face (39, 49) comprises at least two metallised lands (37, 38, 47, 48) arranged along two opposite edges of said face.

10 7. Component according to one of claims 1 to 6, characterised in that the transfer face (39', 49') comprises four metallised lands (37', 37'', 38', 38'', 47', 47'', 48', 48'') arranged at the corners of said face (A).

15 8. Component according to one of the above claims, characterised in that several faces (A, C) of the component forming the transfer faces comprise metallised bonding lands.

20 9. Component according to one of the above claims, characterised in that the metallised bonding land(s) (37, 38, 35, 36, 47, 48, 57) arranged on each transfer face (A, C) represent a major part of the surface area of said face (A).

25 10. Component according to one of the above claims, characterised in that an intermediate element (60) is placed between the transfer face (A) of the component (40) and the transfer surface (21).

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11. Component according to claim 10, characterised in that the intermediate element (60) is placed between the component (40) and the transfer surface (21) with a shim or positioning adjustment stop function.

12. Component according to claim 10, characterised in that the intermediate element (60) is a heat sink or a cooler.

13. Component according to one of the above claims, characterised in that it comprises several layers (31, 32) of distinct media which are arranged parallel to said plane.

14. Component according to one of the above claims, characterised in that it forms an optical resonant cell (30) for coherent light, two opposite side faces (E, F) parallel to said plane comprising reflecting layers (33, 34).

15. Method of assembly of a device in which at least one component (30, 40, 50) comprising at least one layer defining a plane is transferred onto a transfer surface (21), including operations consisting of:

- depositing a metallisation (77, 78) on at least one face (A, C) of the component, not parallel to said plane and called the transfer face, so as to form one or more metallised bonding lands (35, 36, 37, 38, 47, 48, 57), then,

- transferring the component onto the transfer surface and,

- making a solder (27, 28), between each metallised bonding land (37, 38) of the transferred component and the transfer surface (21);

characterised by the following steps, prior to forming the metallised lands:

- providing at least one notch (37, 38, 47, 48, 57) excavated and set back from the transfer surface (39, 49, 59) of the component in the transfer face (A) of the component (30, 40, 50), and

- depositing metallisation in notches so as to form metallised lands set back from the transfer surface of the component.

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16. Method of assembly according to the above claim, including further operations consisting of:

- providing a support platform (20) comprising said transfer surface for the component, and,

- making a metallisation deposit (25, 26) on the surface (21) of the platform.

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17. Method of assembly according to the above claim, in which the metallisation operation consists of metallising one or more mounting lands (25, 26) distributed around the surface (21) of the platform, the location of the metallised mounting land(s) (25, 26) corresponding to the transfer

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locations of the metallised bonding lands (37, 38) of the component(s) (30) to be transferred.

18. Method of assembly according to claim
5 16, in which the metallisation operation consists of metallising one or more mounting lands on the surface of the platform, each metallised mounting land corresponding and surrounding the transfer position of several metallised bonding lands of the component(s) to
10 be transferred.

19. Method according to one of claims 15 to 18, in which it is planned to:

- excavate at least two assembly notches
15 (37, 38, 47, 48) for each side face (A, C) of the component (30, 40) to be transferred, and then to,
- form at least two metallised mounting lands (37, 38, 47, 48) for each side face of a component to be transferred, so as to,
- 20 - actively adjust the angular axial alignment of the component (30) with respect to an axis (00) with 2 degrees of freedom.

20. Method according to one of claims 15 to
25 19, in which the following are planned:

- excavate four assembly notches (37', 37'', 38', 38'') for each face (A, C) of the component (30') to be transferred, and then,
- form four metallised mounting lands (37', 37'', 38', 38'') at the bottoms of the four notches of
30 each face of the component to be transferred, so as to,

- actively adjust the angular axial alignment of the transferred component with respect to an axis (00) with three degrees of freedom.

5 21. Process for manufacturing components according to one of claims 1 to 14, characterised in that it includes steps consisting of:

- providing a substrate wafer (70) comprising the blank of the component(s) (30, 40),
- 10 - etching or cutting a series of parallel slits (75, 76) in the wafer, the slits being excavated from a portion of thickness of the substrate, and,
- depositing a metallisation (77, 78) at the bottom of the slits previously etched in the thickness
- 15 of the wafer.

 22. Manufacturing process according to the above claim, in which the etching step includes operations consisting of:

- 20 - depositing at least one layer (74, 74') of photoresist covering at least one face of the substrate wafer (70),
- insulating said photoresist layer(s) through an etching mask with a series of parallel
- 25 opening slits, and,
- performing etching (75, 76) through the insulated photoresist, etching extending towards the core of the substrate and stopping on one portion of the thickness (79) of the wafer, to prevent separating
- 30 the wafer (70).

23. Manufacturing process according to either claim 21 or 22, in which the series of parallel slits (75, 76) includes slits that extend longitudinally so as to form trenches or grooves in the surface of the wafer.

24. Manufacturing process according to either claim 21 or 22, in which the series of parallel slits includes at least two parallel strips of short transverse slits so as to excavate a network of cavities (36', 36'', 38', 38'', 48', 48'', 57', 58') in the surface of the wafer.

25. Process according to one of claims 21 to 24, in which the metallisation step includes several operations to deposit successive layers of distinct metals.

26. Process according to the above claim, in which metallisation includes three operations for successive deposition of titanium, nickel and gold to obtain a Ti/Ni/Au triple layer.

27. Process according to one of claims 21 to 26, in which metallisation is obtained by cathodic sputtering by evaporation or by chemical vapour phase deposition.

28. Process according to one of claims 21 to 27, including an additional step consisting of:

- finishing cutting by etching of the components by performing another etching operation or mechanical cutting directed along the extension of the axis of the slits, in which the cut line (80) is
5 narrower than the separation thickness of said slits (75, 76).